I: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

228 *mawarid*. O'Shea relates that in Oman the pearl is commonly referred to as *qumash*, which is also Arabic for "material" or "goods." [16]

228 133 Pearl-bearing oysters are found in most of the Persian Gulf waters in depths varying from just below low tide to 20 fathoms. On the Persian side of the Gulf the bottom falls off rapidly to the 50-fathom maximum in the Gulf. On the Arabian side the bottom slopes off gently so that there are extensive areas within the 20-fathom limit. Thus, there are few pearl oysters on the Persian side, although fine pearls have been reported from near Kharaq Island off Bushire, and from Lingeh, but these are exceptions. However, extensive pearl beds are found along the Arabian side, stretching almost continuously for 700 miles from near Ras al-Khaymah east of Sharjah on the Trucial coast, to Ras al-Misha'ab south of Kuwait, the best beds being between 5 and 10 fathoms. The most productive are located to the north and east of Bahrein Island; this is probably why Bahrein has been the pearl center of the Persian Gulf. However, Dr. A. E. Alexander, a leading authority on pearls who visited the banks in 1947, estimates that only 35 percent of the Gulf pearls come from around Bahrein Island; the remainder comes from the Trucial Coast and from the banks near Kuwait.

228 502 825 The success of any pearling season seems to be as unpredictable as the habits of the pearl oysters themselves; the oyster beds shift periodically so that their exact location is not known until the diving starts. Sometimes the pearls are plentiful and valuable, at other times they are neither. Sometimes a bank is sterile for several seasons; then the next it may yield all the highest quality pearls. None of the banks are charted; each *nakhoda* has his own knowledge of them and his own theories. Arab experts believe that the largest, most dense, and whitest pearls come from deep water, while shallow water yields only low density pearls tinted with some color. Some of the more pessimistic Arab observers claim that the Persian Gulf fisheries never yield over two first-quality necklaces in any one season.

[16] Raymond O'Shea, *Sand Kings of Oman* (London, 1947), p. 133.

1: Bowen C-s (1945-1947) 1951 MK2 Maritime Arabs MK2

THE PEARLING FLEETS

The bulk of the main pearling fleets sticks together, the Kuwait fleet moving down the coast while the Bahrein fleet moves up. The pearlers of the Trucial Coast follow the banks from Ras al-Khaymah to Qatar, a straight-line distance of over 400 miles. The Oman pearlers never go above Halyl Island; they work various areas around the islands in small fleets of 10 to 20 boats, the smaller vessels usually working the grounds nearest their home ports. A pearler assumes a position on the edge of a bank so that by paying out anchor line it will drift across the bank. When the divers begin to bring up only a few oysters, the boat is allowed to drift to a new position. After it has worked completely across the banks, the crew moves it back with the sweeps, to chants and drum beating. It is here that the true skill of the *nakhoda* comes into play — to keep his ship over virgin beds. When day ends the large ships stay on the beds and the crew settles down for the night; the smaller ships usually make for a protected anchorage.

Estimating the number of dhows and men employed in the Persian Gulf pearl fisheries is similar to estimating the population of the Arabian Peninsula. The published figures are largely based on Arab guesswork; most of them are probably much too high. Registers of a sort are kept in every town and port along the coast sending boats to the fisheries, so that figures do actually exist. But these are not published, and an accurate count would necessitate a survey of the whole long Gulf littoral.

In one of the earliest European references to pearling in the Persian Gulf, Niebuhr states that in 1763 the inhabitants of Kuwait lived by the fishery of pearls and fishes, and were said to employ more than 800 boats in these tasks.[11] Over half a century later, Wilson estimated that the pearl fishing boats on Bahrein amounted to about 1,500.[12] In a short account of pearling on the Trucial coast, Whitelock states that in the 1840's there were said to be something over 3,000 boats in the Gulf fisheries.[13] Whitelock adds that the smallest boats had 5 men and the

[11] Carsten Niebuhr, *Travels Through Arabia* (Edinburgh, 1792), p. 127.
[12] D. Wilson, *op. cit.*, p. 225.
[13] H. H. Whitelock, "An Account of the Arabs of the Pirate Coast," *Trans. Bombay Geographical Soc.* I (1844), pp. 42, 45.

1: Bowen C-4 (1945-1947) 1951 MK2 Maritime Arabs MK2

228 464 132 for the minimum winter air temperature to be in the middle forties; during this period the sea water temperature in shallow water will be in the low sixties.

228 147 464 132 Pearl diving requires that the diver's body be almost continually in the water. From experience the Arabs have found that the surface water temperature has to be about 85° F. before continued deep-water diving is feasible; thus the main pearling season (*al-ghaws al-kabir*, or "great diving") averages four months — from June into the first week of October. During this time the maximum surface water temperature exceeds 90° F. (in August) off Hasa. O'Shea states that on the Trucial Coast *al-ghaws al-kabir* often lasts until late October, the water apparently remaining warmer longer there than further north.[19] In addition to *al-ghaws al-kabir*, there are two other seasons: the "cold diving" season (*al-ghaws al-barid*) running from April to May, and the *mujannah*, running from October to March. The smaller boats run out in the shallower (warmer) waters for *al-ghaws al-barid* and act as a barometer for the season, while the *mujannah* is worked by waders who work along the shore when the tide is out, many equipped with glass-bottom "look boxes."

527 228 For *al-ghaws al-kabir* the various fleets, whether from Kuwait, Bahrein, or the Trucial Coast, leave port en masse with flags flying, to the beating of drums and Arab chants. The few boats from the smaller ports slip out without fanfare. It is a stirring sight to see these fleets of dhows maneuver with their sweeps and then set forth under huge spreads of lateen sails, with their freshly oiled, burnt-brown hulls glistening across the aquamarine water, like some ancient Phoenician or Roman fleet.

228 502 An admiral represents the pearl fishing fleet of each port. It is the admiral's boat which leaves the port first, and the admiral's duty to determine when the water becomes too cold for continuous diving. It is considered improper (by the owners) for the *nakhoda* of any large vessel to leave the pearl banks before the admiral leaves.[20]

[19] R. O'Shea, *op. cit.*, p. 137.

[20] The admiral of al-Khobar, Saudi Arabia, now works for the Arabian American Oil Company, for al-Khobar no longer sends vessels out to the pearl grounds.

J. Bowen C-4 (1945-1947) 1961 MK2 Maritime Arabs MK2

[502] One of these submarine springs, located a few miles north of Jubail, has been marked by a spar buoy by order of King Ibn Saud.

O'Shea states that while the divers on the Trucial Coast are rarely attacked by sharks, about 30 were attacked and two killed around 1940.[27] Whitelock states that the Arabs claimed that the danger of sharks was ever present, but that their worst fear was from the saw fish, which had been known to cut divers completely in two.[28]

Rihani writes that what the Persian Gulf pearl diver dreads most is the *dawl*. However, he apparently does not realize what the *dawl* is, merely quoting Sheikh Khalifah ibn Muhammad al-Nabhani's *History of Bahrein:* "The *dawl* is a semi-fluid animal, about the size of a man's hand, round in shape, with a multitude of tendons about two feet in length, resembling a network of silk. It has no power of locomotion, but is driven by the waves and currents hither and thither. If it comes in contact with the body of man, it burns it, leaving a deep scar; and if it is lifted out of the water and left in the sun for five minutes, it dissolves." [29]

The zoologist will immediately recognize this description of the *dawl* as a jellyfish. It is in fact a small bell-shaped jellyfish with two to three foot-long tentacles. The *dawl* swims at any level and is practically invisible underwater; thus the divers cannot keep away from the stinging tentacles, which will burn the body and can put out an eye. Along the Ras Tanura peninsula, the *dawl* is most often seen near the surface shortly before flood tides.

There is a species of needle urchin (*Diadema*) in the Persian Gulf with spines from one or two feet long.[30] It is known that these spines will produce nasty slow-healing wounds if bumped into under water. This urchin may be the cause of some of the open sores on the divers' legs, although salt water alone could cause them, for the Persian Gulf has the highest salt content of all the ocean bodies, and constant immersion in salt water is known to produce a rash. However, as the *Diadema* is black and several

[27] *Ibid.*, p. 138.
[28] H. H. Whitelock, *op. cit.*, p. 43.
[29] A. Rihani, *op. cit.*, p. 280.
[30] *Diadema* was first reported from the Persian Gulf by this author: A. H. Clark and R. LeB. Bowen, Jr., "Echinoderms of Saudi Arabia," *American Museums Novitates*, No. 1350 (1949).

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825

FIG. 26—Emir Nasir of Dafin with a season's crop of pearls from his pearling jalbuts.

Pearl oysters are found from low-tide level to 20 fathoms. There are pearl beds off the whole Arabian coast from Bahrein to Ras al Mish'ab, but the best banks are north and east of Bahrein Island, and the best beds between 5 and 10 fathoms. The beds are not charted; indeed, this would be useless, since they shift periodically. A bank may be sterile for several years and then suddenly produce the finest pearls of the season. The Arabs believe that the best pearls—the largest and whitest—come from deep water, though some of the more pessimistic say that the Persian Gulf never yields more than two first-class necklaces in any one season.

527 The pearling boats leave Bahrein, Kuweit, and the Trucial Coast of
502 Oman for the main season en masse to drum beating and chants, but the few dhows from the Saudi Arabian ports slip out unceremoniously. The Bahrein fleet works up, the Kuweit fleet works down, and the small Saudi Arabian fleet works in the middle.

The *nakhoda* (captain) of a pearling dhow orients his craft at the edge of a bed so that when the anchor line is paid out, the dhow will drift across the bed. When the divers start to get only a few oysters, the dhow is allowed to drift a little. When it is completely across the bed, the crew moves it back to a fresh location with the sweeps, to the accompaniment of drum beating and chants. It is here that the nakhoda shows his real skill and knowledge, for he must keep his craft in virgin water.

292 Pearl diving in the Persian Gulf is essentially "skin diving." The diver
293 wears only a loincloth and leather fingers to protect his fingers from sharp coral and shells; a horn noseclip and cotton or beeswax to stuff into his ears complete the "equipment." The use of drags, dredges, or compressed-air diving suits has been prohibited by the British, long the protectors of the Persian Gulf, and only the inhabitants of the Gulf—Arabs and Persians—can work the pearl fisheries.

136 stinging tentacles that can easily put out an eye. There is also a needle urchin (*Diadema*), first reported from the Persian Gulf in 1949.[9] This urchin has spines more than a foot long, which can cause nasty, slow-healing wounds. However, as the urchin is several feet in diameter, black, and slow-moving, it is more easily avoided than the dawl.

164 752 Pearl divers suffer from a variety of diseases, most of which can be directly traced to their occupation. Open sores and skin ulcers result from encounters with the dawl and scrapes against coral and other sharp objects. Suppuration of the eardrums, rheumatism, and nosebleeds are common. Inflamed eyes are always a sign of the pearl diver. Persian Gulf divers are more susceptible to the "bends" than divers who use suits, since they must surface as rapidly as possible.

262 461 Divers never eat while they are working. When the day's diving is finished, the diver has some rice, dates, and tea, but not much else; sleep is his only energy builder. Every 10 days or so the divers get a rest, and every three weeks or so the dhows put in for food and water unless they have been revictualed at sea.

228 312 502 438 In recent years Ras Tanura has become a center of activity for the pearling fleet off its shores; for the oil company's installations can now pump an abundance of fresh water into the water tanks of the dhows much faster than it can be transferred by waterskins. The larger vessels anchor for the night on the banks; the smaller vessels sometimes take shelter if it is available. Some vessels of the pearling fleet replenish their water supply from the submarine springs that gush into the Persian Gulf in numerous places along the Arabian littoral. Relatively fresh water can be brought up in a waterskin by a diver. One of these springs, marked by a spar buoy, is to be found a few miles north of Jubail.

228 The first duty of the day on a pearling dhow is opening the previous day's oysters, which are heaped on deck in a large pile so that no one knows who found the oyster which may produce the rare gem. The muscles of the oysters relax enough overnight so that it is not difficult to open them. Less than a third of the oysters yield pearls, and these are usually only very small seed pearls.

228 442 439 Pearls are sometimes bought on the pearl banks by brokers who travel around in their own boats trying to get the best pearls before other brokers hear of them, and trying to get a valuable pearl before a nakhoda realizes its value. But whether the pearls are sold on the banks or at Bahrein, they

all end up in Bombay

113 [9] A. H. Clark and R. LeB. Bowen, Jr., Echinoderms of Tarut Bay and Vicinity, Saudi Arabia, *Amer. Museum Novitates*, No. 1390, 1949.

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

The Dhow Sailor[1]

BY RICHARD LeBARON BOWEN, JR.

I

SINCE time immemorial, cargo has been transported in sailing ships up and down the South Arabian and the East African coasts. As the medieval Sinbads and the ancients before them had done for countless centuries, so are the Arabs, Indians, and Persians today transporting cargo in sailing ships up and down these same shores. Today these sailors operate the last great fleet of deepwater sailing ships in the world, and because of the special circumstances, this fleet will probably sail on for many more centuries oblivious to the changing pace of life around it. Life for these modern sailors has changed little in the thousand years that have passed since the adventures of Sinbad the Sailor were recorded in *The Thousand and One Nights*.

The Arabs, Indians, and Persians are still able to sail their fleets of

[1] Credit for this article belongs in large part to Mr. Frederick Hunt, who, after reading the author's 'Arab Dhows of Eastern Arabia' in THE AMERICAN NEPTUNE, wrote to the Editor and asked if a follow-up might be possible, 'telling something of actual life aboard a dhow, how the crew lives, watches they stand, living conditions, what they eat, their wages, etc.' Mr. Hunt's outline has been followed almost to the letter, with some additional material added to round out the study.

Shortly after the first draft of the article was finished, the writer was very fortunate to become a member of the American Foundation for the Study of Man Arabian Expedition, which conducted archaeological investigations in South Arabia during the winter of 1950. Almost a month spent at Aden and on the south coast of Arabia, enabled the writer to collect much valuable additional first-hand data on the life of the dhow sailor. The writer is indebted to Mr. Wendell Phillips, leader of the expedition, for his assistance in making this particular phase of the study possible. The writer is deeply grateful to Prof. W. F. Albright, vice-president of the American Foundation for the Study of Man, for his guidance and assistance in numerous details in the work. The writer is also indebted to Dr. Philip K. Hitti for valuable advice on certain points.

In doing any work on the subject of dhows, one must consult what Alan Villiers has written on the subject. By sailing with the Arabs on their dhows for almost a full year Mr. Villiers has obtained an intimate picture of the dhow that the casual observer will completely miss, or the serious worker may not be able to get, as the Arabs are rather suspicious of Europeans who investigate their activities too closely. The writer of this present article has drawn on Villiers' material to round out certain aspects of this article and to supply various facts and figures for which Villiers alone is the source. Most of such material has been taken from his entertaining book, *Sons of Sinbad* (New York: Charles Scribner's Sons, 1940), which in further reference will be abbreviated to A. Villiers, *SS*.

A description of the various types of dhows mentioned by their Arabic names in this article will be found in R. LeB. Bowen, Jr., 'Arab Dhows of Eastern Arabia,' AMERICAN NEPTUNE, IX (1949), 87-132, and R. LeB. Bowen, Jr., *Arab Dhows of Eastern Arabia* (Rehoboth: Privately printed, 1949).

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

lateen-rigged dhows, which operate in the main without the aid of engines, partly because of the amazing predictability of the monsoon trade winds. For millenniums the northeast monsoon has started unfailingly about October and blown for six months, until the southwest monsoon set in about April and continued for the next six months. By a strange coincidence, these winds blow virtually parallel to the South Arabian and East African coasts. The Arabs ride their lateeners down from the north on one wind and return on the other. So convenient is the arrangement that it is probably one reason why the fair-weather lateen rig has persisted for so many centuries on the deepwater dhows in the waters of the Indian Ocean.

The *Periplus of the Erythraean Sea* (written by an anonymous Egyptian-Greek sailor in A.D. 50) tells us that the secret of the periodicity of the monsoons was discovered by Hippalus somewhat earlier and that 'from that time to the present day' ships bound for India from the Red Sea or South Arabia set a course 'straight out to sea.' It should be noted that Hippalus' find was a 'discovery' only from the Egyptian and the Greek point of view, as he discovered a secret that Indian and Arab mariners may have been carefully attempting to hide from Egyptian and Greek sailors. The original discovery of the fact that one could 'sail straight out to sea' and reach India from South Arabia, rather than by coasting, was more of a geographical than a meteorological discovery, for it was a realization of the southern projection of India (see Figure 1). Certainly no sailor in a sane mind would set a course 'straight out to sea' from South Arabia if he thought that the lands around the Erythraean Sea were oriented as shown in Figure 2.

The South Arabian kingdoms long maintained a monopoly of carrying the goods of the East via camel to the West. The Arabians collected the products of India and East Africa at the southern terminal of the famous incense route and sent these north, along with their own products, in huge camel caravans; the recipients in the north thought that all the products they received originated in South Arabia. Many writers have stated that the South Arabian kingdoms were doomed when the West discovered the secret of the periodicity of the monsoons. However, this writer feels that the monsoons had little to do with it; more important was the discovery that many of the coveted products thought to be indigenous to South Arabia actually originated in East Africa and India. After this fact was discovered, Greek and Roman shipping entered the Indian Ocean; in opening up trade with India and Africa they immediately started to slash the revenue of the South Arabians. It should be

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difficult, if not impossible. When shipping out of a port, an Arab simply gets approval from the port police and moves his chest aboard. However, in Africa some ports will not allow passengers to discharge; to get around this, the Arab *nakhoda* sometimes obtains permission for shore leave for some of his passengers, and brings back a different group, who want to leave. Sometimes as much as twenty per cent of a passenger list of several hundred may be shifted in a port, but the dhow still leaves with a full complement, so everyone is happy.

Regulations are a challenge to the Arab, although some of his disregard for regulations may be classed as nothing less than pure thievery. Villiers[21] relates how a Persian dhow managed to load two hundred tons of salt stolen from the Italians at Haifun in 1939. The salt was successfully loaded at night from small canoes, but the dhow was apprehended just as it was ready to sail, and the *nakhoda* was thrown into jail.

III

Arab navigation, on the run from Arabia down the African coast or over to India, is little more than dead reckoning, and a poor brand at that. The only instrument the large Arab craft carries is a compass, which is assumed to give a true reading. Most Arabs have never heard of compass deviation and will not believe that a compass can give anything but a true reading. Besides a compass, the deep sea dhows sometimes carry a chart, which may be of surprisingly recent origin or of surprisingly ancient origin; Villiers[22] tells of once seeing an Arab pilot armed with a chart of the Indian Ocean corrected to 1746! A few Arabs carry Isa Kitamis' *Directory of Eastern Seas* in Arabic, which contains many useful descriptions of the landmarks which may be encountered.

However, as the Arab navigates, a 1746 chart and a faulty compass are ample for his needs, for he simply coasts along, usually in sight of land. Going down to Africa, he sails before the wind with land to starboard; returning he sails before the wind with land to port. The seas that he sails are like a book to him, and he seldom needs his chart; this is possible, as there are no reefs along the African way. When going to India the Arab proceeds in the same manner, coasting along. In going to Africa, the Arab may get out of sight of land while crossing the Gulf of Aden, but it is only a matter of a day or so, as the land is mountainous and high on both sides of the Gulf. In sailing the waters of the Persian Gulf, the dhow

[21] Ibid., p. 112.
[22] Ibid., p. 149.

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is often out of sight of land, at least on the Arabian side, as the Arabian side is treacherous and the coast low and sterile.

A dhow sailing from the Persian Gulf to Africa or to India does not actually go at all out of the way by coasting, as a glance at a map will show. This practice of coasting has the added advantage of keeping the dhow within easy rowing distance of land in case the ship should go down, a possibility never overlooked.

In contrast to the Arabs and the Persians, the Indians still navigate their dhows over open ocean from India. However, a glance at the map will show the reason—craft from India would have to go far out of their way to coast to Africa in sight of land. Thus by necessity the Indians have maintained the knowledge of navigation that the Arabs and Persians had mastered so successfully in medieval times; being able to get along successfully by coasting their deepwater craft, the Arabs and Persians have lost the navigational knowledge which in medieval times brought them in contact with junks from China in the waters farther east. When the Arab has to sail a navigated course, he usually, though somewhat reluctantly, gets an Indian navigator. It is interesting to note that the ancient mariners in Greek and Roman times successfully navigated the southern route to India using only the sun and the stars; the mariners' compass was not invented until the Middle Ages.

There is one other alleged aid to navigation in the Indian Ocean that was known to the ancients. Niebuhr traveled from Arabia to India via dhow in 1763 and related that

> The passage between Arabia and India was formerly thought very dangerous. Ships were carried on by so rapid a current, that they could neither keep their reckoning, nor distinguish the coast during the rainy season: several were consequently lost on the low coasts of Malabar. These misfortunes have ceased to take place, since an observation was made, which has been thought new, although Arrian speaks of it being known to the ancients; in the Indian Ocean, at a certain distance from the land, a great many water serpents, from 12 to 15 inches in length, are to be seen rising above the surface of the water. When these serpents are seen, they are an indication that the coast is exactly two degrees distant. . . . We saw some of these serpents, for the first time, on the evening of the 9th of September; on the 11th we landed in the harbour of Bombay.[23]

On the run down to Africa the Arabs sail by night as well as by day; at night they make sure they are well out at sea and set a safe course by the compass. With its many reefs the Red Sea is an exception, for even local craft with a knowledge of the way anchor by night and sail by day

[23] C. Niebuhr, *Travels Through Arabia* (Edinburgh: R. Morison and Son, 1792), II, 373.

whenever they are near reefs. An exception to this is the slave-runner dashing from Africa to Arabia, for his activities are best carried on under cover of darkness. The reefs in the Red Sea are the main reason why foreign dhows do not venture very far into its waters.

In the field of navigation the Arabs are little impressed with Vasco da Gama's voyage, so famous in the West.[34] The Arabs take all the credit themselves; they claim that da Gama forced an Arab pilot to show him the way to India. Arab legend relates that an Ibn Majid, a famous pilot from the Persian Gulf, was delivered to da Gama by the Sheikh of Malindi (in present-day Kenya) as a hostage for stopping the siege of the town; the Arabs immortalize this Persian Gulf pilot and associate da Gama only with European intrusion into their territories.

The Arab dhow is actually not a very seaworthy craft (see Plate 19—top). It manages very successfully in fair weather, but in any kind of rough weather the dhow is likely to get into trouble fast. The *baghla* is apparently considerably less seaworthy than the *bhum*, as even Arab passengers (who are not particularly well informed about anything) prefer to travel in *bhums*.[35] Apparently the great transom stern of the *baghla* tends to make the craft unmanageable in heavy seas.

In the African port of Mombasa a Casualty Book listing all dhow casualties in the vicinity of the port shows that, while there were frequent accidents with small craft and less with larger craft, there was little loss of life.[36] This stems from the Arab's method of coasting close enough to land so that he can row ashore. However, no records list the number of dhows that have gone down with complete loss of life.

If the dhow springs a leak, it may often be disastrous. On a heavily-laden dhow the crew cannot get at the leak to repair it, and not having any pumps they do not even have time to start bailing. If they can get at it, the Arabs have been known to stop a leak where a plank was stove in by filling a cloth with rice, tying a string around the gathered neck and stuffing it in the hole; when the rice expands it fills the hole tightly.

Villiers[37] relates that a 178-ton Indian dhow loaded with mats sprang a leak and sank off Africa because the cargo prevented anyone from getting at the leak. The crew took fifteen minutes to clear the dhow, and very soon afterwards the sea was over her decks. The early English traveler Palgrave[38] had the same thing happen to him in 1863—an event which

[34] A. Villiers, *SS*, p. 197.
[35] Ibid., p. 106.
[36] Ibid., pp. 191-194.
[37] Ibid., p. 193.
[38] W. G. Palgrave, *Central and Eastern Arabia* (3rd ed., London: Macmillan and Co., 1866), II, 342 ff.

sometimes it is too late, for it may have already gone overboard. The Arab usually has no lines ready when he comes into a mooring and he may just as often throw a loose anchor over as not.

Dhows never show lights of any kind at night, whether under way or anchored. Although British regulations have forced many dhows from various ports on the Indian Ocean to carry lights, there is unfortunately no way of forcing the Arabs to use them. This undoubtedly results from centuries of travel in pirate-infested waters, where a light at night served only as a signal for sudden attack from pirates. There is only a weak light in the binnacle with which to see the course; everything else is dark. Not even when in the sea lanes off South Arabia, in the Persian Gulf, or in the Red Sea, where freighters and tankers beat a constant path, does the dhow show a light. In case of collision at night, the boat that can prove that it showed lights has a legal edge.

At the West Pier at Ras Tanura on the Persian Gulf, there is often considerable movement of Arab dhows and Arab *lanchs* (kerosene-driven native launches). Dhows slip in and out of their mooring like shadows on nights so black that a dirty white sail could not be seen ten feet away. One night a *lanch*, all of which carry lights, hit a rock-laden dhow amidship and in a matter of seconds sent her to the bottom in forty feet of water. Native divers unloaded her, and she was eventually salvaged. Since then, dhows make a frantic attempt to fan their coffee fires up to a bright glow when they see any *lanch* lights approaching, but they still do not carry standard lights. It is an eerie sight to see the glow of a charcoal fire suddenly light up a large lateen sail directly in your path!

When sailing along their own coasts, the Arabs like to sail in two's and three's. This arises from the fact that piracy is by no means a thing of the past. For centuries piracy and robbery were honorable professions among many tribes along the long Arabian littoral; such a reputation did the piratical Omani have during the last half of the last century that the very sight of their characteristic *bedans* and *batils* brought actual fear to the population of Zanzibar.[40] Niebuhr noted dangerous conditions in the Red Sea two centuries ago:

> Although from pirates properly so called, there is little to be feared in the Arabic gulfh [Red Sea], yet, so unskilled are the mariners in these latitudes, that they dare not venture to any distance from the coasts. This timorous mode of sailing might expose a single vessel to the robbery of the Arabs; to avoid which, these ships sail in little fleets; four always setting out together, that they may join to defend themselves.[41]

[40] G. L. Sulivan, *Dhow Chasing* (London, 1873), p. 102.

[41] C. Niebuhr, *Travels Through Arabia* (Edinburgh: R. Morison and Son, 1792), I, 212.

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

overboard, and would have to be bailed out again. Other everyday duties may consist of ropemaking and sail-sewing (see Plate 20—bottom).

Before the sailing duties of the crew can be fully visualized, one must understand how a dhow is rigged. The ocean-going variety is invariably two-masted, although some of the smaller ocean-going craft, that should more properly be classed as coasters, have a single mast. Most large ocean-going dhows can raise a third mast far aft as a sort of jigger if they so desire; this mast and sail are usually borrowed from the longboat. These large dhows never carry this third mast as standard rigging; it is erected temporarily only when needed.

Usually when sailing before the wind large dhows carry only their great mainsails; there is little advantage in raising the smaller mizzen when sailing dead downwind with the mainsail up. However, when sailing downwind in a quartering wind, the mizzen is often raised in addition to the large mainsail. Many of the Indian and some Persian *baghlas* can send up a lateen topsail over the mainsail. Like the ornate carved stern of the *baghla*, which was presumably copied from European galleons, these topsails were probably also copied from the Europeans.[47] It is interesting to note that the *bhum*, which has risen to prominence as an ocean sailer in the last century, apparently never carries such a topsail.[48] The trend among the Arabs is to the least number of sails possible; the Arabs do not consider the setting of a topsail or a jiggermast and sail worth the effort, and few Arabs even carry a topsail.

When going to windward in light airs most large ocean-going dhows can set four sails: the lateen mainsail, the lateen mizzen, the lateen jigger, and a jib. The jib is rigged from the end of a light boom extended over the stemhead. With a big jib on, the jigger will help balance the canvas and ease the steering, but the Arabs still usually consider it too much trouble to set the jigger.

Thus, while some of the large ocean-going dhows have five different sails (main, mizzen, jigger, jib, and topsail) which they can set, they often carry only the mainsail. In adhering to their policy of a few big sails, rather than a number of small sails, the Arabs usually carry three different sizes of mainsails and two different sizes of mizzens. They adjust the size of the main to take care of the wind and try not to set any other sails. However, in light airs, they are often forced to set more canvas, but do it grudgingly.

The mainmast and yard on an ocean-going dhow are nothing less than

[47] R. LeB. Bowen, Jr., 'Arab Dhows of Eastern Arabia,' AMERICAN NEPTUNE, IX (1949), Plate 9.
[48] A. Villiers, *SS*, p. 277.

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

gigantic. The mainmast on a large two-masted dhow is about seventy-five per cent of the overall length of the craft; for a 150-ton dhow it is a massive tree trunk that will tower more than seventy-five feet above the deck and have a diameter of over two feet. The mast is not tapered much, being only slightly smaller at the top than at the bottom. The huge size is necessitated by the fact that, because of the way the Arabs sail, the mast must at times stand unsupported with the sail raised and working. The main yard is equally massive, attaining almost the overall length of the vessel but having a diameter only about one-half that of the mast. The yard is a tapered spar made of stout poles fished and lashed together. On a 150-ton dhow the main yard may weigh over three thousand pounds and the largest mainsail may weigh up to one thousand pounds. This four-thousand-odd pounds of teakwood and cloth is raised solely by manpower using a two-part, twofold purchase.

When the dhow is ready to sail, the longboat must be hoisted and stowed, and the anchors must be raised. In rough weather a large dhow may lay down four or more anchors, as the moorings are usually foul. The anchors are raised to the surface without any tackle, and then they may be brought aboard by a fall from the masthead.

Before the mainsail may be raised on an ocean-going dhow the huge sail must be bent to the massive yard by a series of robands along the whole head. After the sail is bent to the yard, it is secured lightly in stops, so that the yard may be hoisted with the sail neatly furled on it. After the yard is finally mastheaded and the halliards belayed, the sail may be released by a tug on the sheet, which breaks the sail out of the stops. The sheet acts as a rip cord and sends the sail billowing out like a parachute; if the breeze is light, the sail will flutter out like a flag, but if the breeze is fresh, the sail will open with a cannon-like roar. On smaller coastal dhows the sail is not gathered onto the yard in stops, the yard being simply raised with the sail in sailing position.

However, the yard and the sail are by no means raised as easily as one might gather from reading the preceding. As was pointed out above, the yard and sail on a 150-ton dhow may weigh over four thousand pounds and are hoisted by sheer manpower, using only a two-part, twofold purchase. Raising the yard and sail is a great occasion on any dhow, large or small—not by way of celebration, but because it represents so much work. There is a great ritual in hoisting the yard, the ritual becoming more important the larger the dhow. With the order to raise the yard, the sailors start a native song and dance; the pace quickens, and at an appointed place in the singing the sailors fall to the halliards. The halliards are at-

tacked almost savagely as the men chant praises to Allah and stamp the deck as they shuffle by for another chance at the halliard. When the yard, with the sail gathered in stops, is halfway up, the sailors may stop working and go into a dance, snapping their fingers and stamping the deck. On a large ocean-going dhow of 150 tons, it takes a whole hour to masthead the yard—about one-third of which is spent in dancing and singing. On a smaller dhow there is much less organization in raising the sail, but it is usually done faster with less song and dance.

Once the sail is raised and the dhow is under way, the sailors' duties are usually completed for a considerable length of time. However, if the weather changes, the sail may have to be changed. Once under way it may take several hours on a large dhow to lower one sail and replace it with a smaller (or larger) sail. The course may also have to be changed at times, regardless of weather changes. The Arab dhow tacks by wearing while sailing downwind; in wearing all hands have appointed stations, where stays, tacks, and sheets must be shifted.[49]

There is one more important duty carried out semiannually on the great ocean-going dhows running to and from Africa and India: that is cleaning the bottom. The bottom is usually cleaned and refinished before the dhow makes its return trip (from Africa or India) and after it has finished its seasonal trip. The dhow is moved into a shelving beach at high tide, and the ship is lightened as much as possible by the removal of any cargo and its yards, which are lowered overboard. The mainmast is lowered in its gear to the aft of the V-shaped trough in which it rests. Sometimes, depending on the dhow, it is necessary to completely unship the mast; at other times it is sufficient simply to lower it so that its resistance to the wind (and thus its toppling effect) is at a minimum. It should be remembered that the mast on a medium-sized ocean-going dhow is a massive teakwood spar weighing around five tons, while on a large dhow it may run well over ten tons.

When the dhow is lightened sufficiently, it is kedged into shallow water to the songs and chants of the crew laboring on the anchor lines. With the falling tide, mangrove pole props are lashed along the gunwales on each side so that as the tide leaves the vessel dry, it is propped up on stilts. With each successive tide change, the stilts must be carefully reset, as the vessel is partially refloated. To allow a large dhow to topple over is a serious matter, as it may have to lie there until a spring tide lifts it.

When the tide has receded sufficiently, the sailors set to work remov-

[49] For a description of 'wearing' see R. LeB. Bowen, Jr., 'Arab Dhows of Eastern Arabia,' AMERICAN NEPTUNE, IX (1949), 122-129.

4: Bowen C-5 (1950) 1951 MK2 Maritime Arabs MK2

craft furnish the only transportation to many small off-the-track ports. In addition to this it must be remembered that the dhow (or other native coastal craft) can navigate shallow harbors and creeks, while a steamer could not get closer than several miles. Thus there will always be a place for these short range coasters. However, the future of the deepwater dhow is another question.

The debt system has worked for centuries to the economic advantage of those financing the dhows, and to the economic disadvantage of those working on them. It has been impossible for the sailors to break away, as they can never work for another *nakhoda* when in debt to one. There is only one way to break away, and that is to pay the debt. Becoming a farmer or a fisherman does not help, as they usually operate under the debt system also.

On its face in such a financial set-up the merchant has everything to gain and absolutely nothing to lose. In the case above (where the shares, and thus the sailors' wage, were worth about 150 rupees and the merchant made eighteen per cent on his investment on the dhow), if the dhow had made only one-half of what it had, the merchant would still have received about ten per cent on his investment, but the poor sailors would have received only 75 rupees ($22.50) as a year's wage. Thus the dhow can compete against steam only at a sacrifice of the unfortunate economic slaves sailing the dhow. The dhow sailors do all the stevedoring, maintenance work, and sailing for their lowly share of the dhow's earnings; if the sailors received a decent wage (even if only on Eastern standards), the deepwater dhow could not stay afloat as a cargo vessel. Coastal craft operating short distances do pay higher wages on the average than the deepwatermen.

However, the advent of the large oil companies in the Middle East has provided a means wherein the sailors can escape from the bonds of economic slavery. By making jobs which pay good money (on Eastern standards) dhow sailors are able to free themselves of their debts and become free men. We have seen above that the oil companies in Saudi Arabia and on Bahrein Island have decreased the number of boats the pearl fisheries can send out, as they cannot get divers to work for the wage they can offer. Kuwait has long been able to keep a large deepwater cargo fleet of *bhums* on the waters around the Indian Ocean because Kuwait had a surplus of cheap labor—there was little else to do in Kuwait besides work in marine activities. Now that the Kuwait Oil Company has made jobs available to the local Arabs, the cheap labor market is gone for the Kuwait *nakhodas*. Thus as the standard of living is increased and cheap labor